ITEMS OF INTEREST.

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Thots from the Profession.

PROCEEDINGS OF PENNSYLVANIA SOCIETY.

(Continuation of Report of DR. WM. H. TRUEMAN to ITEMS OF INTEREST.)

Wednesday Morning, July 23, 1886.

Dr. J. C. M. Hamilton, of Tyrone, read a paper on

THE DENTAL PULP AND ITS TREATMENT.

He remarked that inflammation of the dental pulp does not differ materially from inflammations elsewhere, and is accompanied by similar symptoms. The first departure from its normal condition of a pulp exposed by caries, when responsive to thermal changes, or to pressure, or from other causes, is an increased flow of blood, marked by pain of long or short duration, or spasmodic, with increasing severity. In the earlier stages, the pain may be general and difficult to locate, but usually becomes more fixed as the disease advances.

In the earlier stages of the disease, the application within the cavity of carbolic acid, oil of cloves, opium in its various forms, menthol, chloroform, etc., will often give relief. A preparation of pure wood creosote and oil of cloves of each half an ounce, adding from ten to twenty grains of acetate of morphia, he recommended in these cases, having used it for a long time with most satisfactory results. He referred to an article in the June number of the *Dental Cosmos*, in which the writer condemns pulp capping as inapplicable to a pulp once inflamed, even in its early stages, and advising devitalization in all such cases. Of this he did not approve. While in the later stages of the disease the risk is so great that it may be better to devitalize at once, he emphatically condemns the wholesale destruction of pulps there advised. In all pulp exposures where no previous irritation has existed, or when the inflammation has not advanced beyond its first stages, he carefully prepares the cavity, and, in simple cases, caps at once, using for this purpose a cement; if, however, inflammation is present, he

allows a small pledget of cotton saturated with the preparation just mentioned to remain in the cavity twenty-four hours at least, securely covered with cotton and sandarach varnish, after which the capping may be applied. Oxid of zinc made into a paste with the creosote and morphia preparation he had used as a pulp capping the last two years with very satisfactory results, carefully covering it with a cement, which in turn was covered with a more durable material, after the lapse of a few weeks or months.

The same preparation with arsenic added, he used to devitalize pulps, securing by its use entire freedom from the excruciating pain so frequently following the use of arsenic alone.

Dr. H. C. Register, of Philadelphia, read a paper on

COMPRESSED AND WARM AIR AS A GERMICIDE, PAIN OBTUNDER, AND OTHERWISE USEFUL AGENT IN DENTAL PRACTICE.

He claimed no originality in the use of warm air, or air under pressure in dental practice, that honor belongs to the inventor of the air syringe in general use. Several professional friends, whom he named, had used compressed air in much the same way that he would presently describe, but only to a limited extent. He had been assured by them that he had carried his investigations and use of the air system much farther than they had, and finding daily good results from its use, he felt it a duty to make it known. While there is yet a diversity of opinion, it is generally accepted by the profession that micro-germs have much to do with the production of caries. This has been so clearly shown by the investigations of Dr. Miller, of Berlin, that Prof. Black, referring to them, says: "It was the most perfect work of the kind that the world ever saw. Its experiments were so scientifically conducted, and the products so carefully analyzed, that he left not a hook on which a tenable objection could be hung. With these investigations we as a profession have much to do. If by reducing these invaders of the oral territory to the minimum we get rid of the most persistent cause of caries of the teeth, it is right that a sanitary system should be introduced into every household to that end. Flushing the oral cavity at least once a day, by atomization under sufficient atmospheric pressure with an alkaline wash, would so reduce the prevalence of these destructive germs, and so counteract the acid found in the cavities of the teeth, that the reacting force of life would check the carious growth. He described at length the accepted theory of the origin, life history, and relation of micro-germs to dental caries, showing that moisture of a fermentive character was essential to their existence, and contended that those germs which could not be washed away by atomization would be destroyed by a continuous current of

air heated to 120°. He suggested using this warm air current immediately before filling, not only destroy any germs that may be beyond the walls of the cavity, but also to render this portion of the teeth less favorable to their existence, and to secure a more perfect adaptation of the filling.

He found the continuous warm air current an excellent pain obtunder in sensitive dentine. In preparing for filling he adopted the following method: After opening the cavity, using the atomizer under strong pressure, he carefully washed the cavity and surrounding parts with listerine or other like liquid. The dam is now applied and the cavity dried slightly with warm air. At first this is irritating, sometimes producing a slight pain during its application. The thin walls are now broken down, and the decay removed. If the tooth continues sensitive, it is bathed in equal parts of carbolic and tannic acid, atropia, or other like obtunder. The warm air, at about blood heat, is now applied, very gently at first, and stronger as the patient can bear it. In a few minutes sensation will be so far reduced that considerable cutting may be done, producing in most cases no pain. After the cavity is shaped, the air is applied and thorough dryness secured. While it is in this condition, he is in the habit of covering the dentine in large quantities with a film of gutta percha, or collodion; in deep cavities, phosphate of zinc may be used at the bottom and thoroughly air dried. Cold air, which previously could not be tolerated, can now be thrown into the cavity without producing the slightest irritation. In small cavities this care is not necessary.

Devitalized teeth, to which there is no fistulas opening, but containing a putrescent pulp, should be opened with as little pressure on its contents as possible, making a large and free opening into the bulbous portion of the pulp cavity. The atomizer should now be brought into use under low pressure and the putrescent matter washed out, using for this purpose any preferred wash. The dam is now applied and air, heated to the degree of toleration, gently forced into the whole extent of the canals. After drying, a nerve broach may be introduced to detach the dried portions, the air being allowed to fill the canals at the same time, and lift or blow these portions out. After this has been done, he uses a mixture of iodide of zinc and permanganate of potash, of a creamy consistency; taking a small portion on a broach and by a gentle rotary motion flowing it into the canals, after which the warm air is applied. If there now remains the slightest odor of decomposition, the treatment is repeated, or a drop or two of aromatic sulphuric acid is flowed into the canals and the warm air again forced in under low pressure. The canals are now filled with oxychloride of zinc, into the oxid of which is added a few grains of iodoform. In treating

putrescent pulps with a fistulas track, the same care in cleaning the canals is not required. The atomizer may be applied under strong pressure to wash the track with tepid water, after which the desired escharotic may be used, it also being forced through by the same means. Aromatic sulphuric acid he accepted as the best remedy for general use. He objected to the use of carbolic acid at this stage, as it is not a solvent; its after-use, however, may be indicated. In over-sanguine faith in carbolic acid, has, he believed, caused about as much trouble to dental practice as it has done good.

He used the atomizer in treating pyorhea, using heavy air pressure to force the remedy well into the pockets, and advised its constant use after treatment had ceased, to keep the spaces between the teeth clean and in a healthy condition. His method is as follows: First cleanse the necks of the teeth from all foreign substances, using a germicide with the atomizer, throwing it deep into the pockets so as to wash out all loose matter. The air is now used with a simple blow-pipe, the gums being held back by the force of the air jet. The parts are fully open to view while all hard matter is cut or scraped away down to the healthy peridental membrane by means of scalers. If the character of the detached gum calls for it, amputate those portions which are known to have lost attachment to the teeth, or cut them away so as to promote granulations. He recommends that the patient be provided with an apparatus so as to keep up the treatment of atomization after each meal and on retiring.

He uses the warm air in treating discolored teeth with marked advantage. After treating the root and closing the opening at the apex, while the rubber dam is in position, he first relieves the tooth of defective tissue, then the warm air is thrown into every part under a pressure of from twenty to twenty-five pounds to the square inch, being heated to as high a temperature as the patient can bear. After from two to five minutes drying, he makes an application of aromatic sulphuric acid of full strength, allowing it to remain a minute or two. He desires to get the solvent action of the acid; any other agent that will act on the discolored matter and upon the tubes, and yet not act too quickly on the dentine, would probably answer as well. The warm air is again applied and the tooth structure rendered as dry as possible. After two or more applications of the air and acid alternately the cavity is washed with the atomizer under heavy pressure, catching the liquid in a napkin, so as to avoid disturbing the rubber dam. The tooth is now carefully dried, and the cavity saturated with Labarraque's solution of chloride of lime; this preparation acts both as a bleacher, and as an alkali to neutralize any acid that may remain. The warm air is again applied till the tooth is perfectly dry; then the

solution of lime is again applied, and the tooth again dried; this being repeated several times. Any bleaching agent may be used. The advantage of the air drying consists in getting rid of the moisture in the distal portions of the tooth, so that the solvent and bleaching agents may follow up the discolored matter. The manipulations here described may probably take about half an hour. When the color is satisfactory the cavity in greater part is filled with gutta percha or zinc phosphate cement, and finished with a gold filling. Cases treated in this way retain their restored color, and look well.

In conclusion, Dr. Register earnestly recommended the use of an atomizer in addition to the tooth-brush for daily use. A harmless alkali like lime-water, or a mild germicide mouth wash, being used under a pressure of from ten to thirty pounds; it is quickly done, and under that pressure the liquid is broken up and forced between the teeth, not only removing any remains of food, etc., but neutralizing any destructive agent most effectively. The doctor illustrated its use for this purpose. The effect is rather pleasant, and with a suitable mouth wash leaves a sensation of cleanliness that is gratifying, being much more pleasant than that felt after a thorough scrubbing with a tooth-brush.

The air compressing apparatus used by the doctor resembles closely the well-known Burgess Mechanical Blow-pipe. It consists of an air-pump, worked by a pedal, over which is mounted the air reservoir, provided with a pressure gauge, and suitably arranged openings, to which a flexible rubber tube may be secured, the pressure being controlled by a stop-cock. Several sizes are on the market, being intended for office use they are handsomely gotten up. The doctor exhibited quite a collection of atomizing tubes of various shapes, and also a number of blow-pipes designed for special uses; most of them were experimental. He finds that but few are really needed. They are attached to the air-compresser by a flexible rubber tube, and each is provided with a stop-cock readily controlled by the fingers of the hand that holds it, so the air current is always under control. The apparatus is not expensive, is quite simple, and easily managed, and, if as useful as it promises to be, is well worth having.

The reading of the paper was followed by quite an animated discussion; more, however, in the nature of questions concerning the use of the various pieces of apparatus exhibited, and their special uses, than on the system itself. This was so novel, and, having been used by no one present except the essayist, it excited considerable interest.

The election for officers was now held, with the following results:

President, E. P. Kremer, Lebanon; First Vice-President, H. C. Register, Philadelphia; Second Vice-President, W. F. Fundenberg,

Pittsburg; Recording Secretary, Wm. B. Miller, Altoona; Assistant Secretary, Jos. R. C. Ward, Philadelphia; Corresponding Secretary, W. H. Fundenberg, Pittsburg; Treasurer, J. C. M. Hamilton, Tyrone.

Board of Censors—J. S. Goshorn, W. E. Van Orsdel, G. L. Robb, C. S. Beck, A. Boice.

Board of Examiners—J. C. Green, and W. E. Magill, re-elected.

Next place of meeting, Glen Summit, Luzerne county, with Pittsburg as an alternate, if satisfactory arrangement for the former place cannot be made.

[TO BE CONTINUED.]

ARTIFICIAL TEETH FOR A SMALL CHILD.

DR. GEO. H. WEAGANT, CORNWALL, ONT.

My little daughter, three years old, when quite a baby, was so unfortunate as to lose the crowns of her four upper incisors. They had decayed very rapidly, and were broken off, one at a time, by accident,—the pulps, of course, becoming devitalized. This is not such an uncommon occurrence as to be deemed of great importance; but, to me, the disfigurement of her mouth was a constant regret, especially as I knew three or four years would probably elapse before the permanent teeth would arrive. The idea occurred to me that I might attach artificial crowns to the roots, providing my little patient would submit,—for she was always very timid about having anything done to her teeth, else I might have filled them when they began to decay. However, I determined to attempt it; and the more I thought it over, the more feasible the scheme appeared. So, after much coaxing, and promises of many rare and costly gifts, I managed to enlist her interest and allay her fears sufficiently to enable me to begin the siege. I first gave my attention to the roots; and I soon found that no treatment would allow of their being closed entirely, whatever my subsequent procedure would be. I must provide for free drainage. The jagged ends being cut down evenly just below the margin of the gums, a very thin platinum cap was struck up to fit each one accurately, and a strong tube of the same metal, fitting into the enlarged nerve canal, was passed through and soldered to each cap. The projecting end of the tube was then cut off close to the cap. The crowns were the next consideration: and, though I selected the very smallest plate teeth I could find, I was obliged to grind them down much to get the proper size and shape. Even then they were so thick that the porcelain came over the center of the roots and covered the end of my tube. So, to make a continuation of the drainage canal, I cut a longitudinal groove into the porcelain at the back of each tooth, passing up between the pins. I used a thin corundum wheel for this purpose. The teeth were then

backed with platinum, and the little grooves filled with gold foil. The crowns and root-attachments were then fastened together with wax, placed in the mouth and fitted to the exact position desired, removed carefully, invested in sand and plaster and soldered together with pure gold. The angle between the crown and cap was filled also with pure gold. Then, with a drill the same size as the bore of the tube, my drainage canal was completed through the gold and platinum backing. Everything being now ready, it was but the work of a few minutes to cement each crown to its proper place in the mouth, using a good, quick-setting oxyphospate of zinc.

It must not be supposed that this undertaking all through was a very easy one; when it is considered that my patient was a timid baby only three years. But the result has well repaid me for all my time and trouble. My little daughter's mouth is restored to its natural appearance, and her smiles no longer disclose a hideous row of blackened and dismantled stumps. She is able to speak much more plainly, and can bite her food as well as if the teeth were the original organs. It does one good to see her bite into an apple—a performance she has been unable to do for many months.

What changes a year or two may bring forth remains to be seen. I have never heard of substitutes for deciduous teeth; if any of your readers have ever made the attempt, I would be glad to learn from them the result of their experiments.

"MUCH OR LITTLE WATER IN VULCANIZING?"

GEO. B. SNOW,* IN DENTAL ADVERTISER.

I noticed recently in one of our leading dental offices that in vulcanizing a case the boiler was filled nearly to the brim with water. If those who still follow that method would put but a half dozen spoonfuls in a steam-tight boiler, even placing something under the flask to keep it from the water, they may discover three advantages in the device: a tougher plate; absence of much disagreeable odor, and models and investments disintegrated. Give a little longer time for vulcanizing by this method. Those who offer new machines for accomplishing this purpose may not thank me for this suggestion.—DR. F. A. WILLAMSON.

This clipping from the ITEMS OF INTEREST gives advice which is right and wrong. A series of recent experiments not yet fully completed, seems at this time to raise a serious doubt as to whether a piece of rubber vulcanized in steam and above water can be distinguished by its texture from another piece of the same rubber, properly vulcanized under water, The caution extended "to give a little longer time for vulcanizing," gives the clue to the superior qualities, if any there be, to the steam-vulcanized product. The mixture of air and steam,

* Mr. Snow has had long experience in making and using vulcanizers.—Ed. ITEMS.

usually included in a "steam-tight" boiler, is not so good a conductor of heat as is pure steam. The flask will not be as hot by several degrees when resting in the steam-space as when placed under water, and it is undeniably the fact at a low temperature and long time produces the best results in vulcanizing. Hence, if two flasks are placed in the same vulcanizer, one in the water and one in the steam-space, there will be quite a difference in the quality of the rubber vulcanized in them, both being subjected to the same time, and apparently the same heat.

Some of the first dental vulcanizers made, dating very early in the sixties, consisted of a boiler with a separate vulcanizing chamber above it, the flask being thus placed in an atmosphere of steam, all condensation at once descending to the boiler. It was deemed a long step in advance when it was found that a single-chamber vulcanizer would answer all purposes, the vulcanization being done as well under water as in steam.

It is probable that the practice of covering the flasks with water arose from its being found that there was less difference in the hardness of the rubber in the different flasks when this was done. It is a well-known fact that such a difference exists, and is quite noticeable when the contents of the upper and the lower flasks are compared, when three flasks are put in the vulcanizer, one above the other, even when all are covered by water. The reason for this difference is, that water is a poor conductor of heat, its temperature being equalized mainly by circulation or "convection." The space between the flasks and the walls of the vnlcanizer being narrow, circulation of the water is necessarily obstructed to some extent, and the lower flask, receiving the heat directly as it is transmitted through the bottom of the vulcanizer, becoming a few degrees hotter than the upper one.

Now, if these three flasks were placed in the vulcanizer with "a few spoonfuls of water," this difference of temperature will be no less, but rather greater, if they were in an atmosphere of mixed air and steam. If precautions are taken to expel all the air, the temperature will be uniform throughout the vulcanizer, and the vulcanizing uniform in all the flasks. As vulcanizing is usually done, with more or less air included in the vulcanizer, the actual temperature of the water may be as much as twenty degrees higher than the indication of the thermometer, which only gives the temperature of the vulcanizer cover on which it is fixed. This is shown by the fact that a steam-guage and a thermometer, mounted on the same vulcanizer, cannot be made to agree in their indications unless all air is expelled from the vulcanizer.

A very important factor in doing good vulcanizing, is an even temperature; any sudden variations are sure to be shown in the quality of the work. Spongy rubber is sometimes caused by a sudden fall in

temperature and pressure. This is one of the principal reasons for the uniform excellence of the work done by the gas-regulator, as this device automatically keeps the temperature at the desired point when it has once been attained.

There is a good reason for not filling the vulcanizer very full of water, aside from any effect on the vulcanizing process. If there is not sufficient steam room above the water, its expansion by heat will cause it to blow out the safety disc before the vulcanizing point is reached; or, in an extreme case, if there is no relief, the vulcanizer may burst under the strain. This is an entirely different thing from steam pressure; there will be no explosion, but the vulcanizer will give away and relieve the strain.

Water is not perceptibly elastic, and its expansion by heat in a chamber which it perfectly fills will give rise to a tremendous pressure, which, however, will be wholly relieved by a slight yielding of the walls of the chamber, or a small escape. A Whitney vulcanizer was once returned with the sides of its pot stretched to a quarter of an inch greater than the original diameter. On inquiry it was found that it was the effect of several vulcanizations, the vulcanizer each time being filled "brim full" of water. This was in the day of fusible safety-plugs, which did not give away to pressure, but only when the temperature rose above the vulcanizing point.

In another case, trouble was experienced with a Hayes boiler, the discs constantly blowing out. The dentist finally put on three at once, and was rewarded for his trouble by a rupture of the vulcanizer bottom. The cause of all the trouble was found to be, on inquiry, "filling the vulcanizer full of water."

The desire for quickening the vulcanizing process has led to the use of too high a temperature; hence the numerous complaints of brittle plates and spongy rubber.

Superior results can be attained with any good vulcanizer by a low heat, say 300°, the time being lengthened accordingly. The plate may be placed under water or in steam; but to secure any certainity that the thermometer will indicate the true temperature of the interior of the vulcanizer, all air must be expelled from it by blowing off steam when it is first forming. Then the rubber will not be over-heated, and all the work will be evenly done.

It is estimated that coca is used by 10,000,000 of the human race; betel nut by 100,000,000; chickory by 40,000,000; coffee by 100,000,000; hashish is eaten or smoked by 300,000,000; opium by 400,000,000; 500,000,000 use tea, and all the known people of the earth use tobacco.

A NEW ANESTHETIC.

A week ago, a little bald-headed dentist, who lives in Brooklyn, sent invitations to the eminent doctors in this city and Philadelphia, asking them to be present at a series of experiments that he proposed with a new anesthetic he had discovered. He explained that his compound was something entirely unknown hitherto, and the result of five years' work. He pleaded that he was poor, and could not afford to give his formula to the world; and, though he was willing to demonstrate the uses of his discovery, he preferred to keep its ingredients to himself.

When he appeared in the laboratory of a friend to demonstrate the practical advantage of his discovery with patients, he found nobody there to listen to him. But on Tuesday afternoon six well-known physicians and a reporter, in the parlor of an up-town dental establishment, awaited his arrival. He came at last, mopping his bald head and shaking the rain-drops from his threadbare coat. In a rambling sort of a way, while he opened his instrument bag and evaporating pans, the dentist made a little speech, in which he told the story of his discovery.

"For many years," he said, "I have thought that progressive science should devise some means for producing natural sleep at will. Knowing that the agents heretofore used for producing anesthesia seriously interfered with the natural and indispensable functions of the heart, lungs, and brain, I determined to investicate, and discover, if possible, some agent that would produce natural sleep at will, without pain or danger, or in any way interfering with the normal organic functions of the human system. In my researches I find the function of the brain suspended in two ways: first, a complete suspension of the brain function, as in coma; second, as in syncope or prolonged faint. No person can be wakeful with a diminution of the blood circulation of the brain. Sleep depends entirely on that. If, however, the condition of sleep becomes abnormal, and remains so for a considerable time, the syncopic effect must produce death. Chloroform, ether, nitrous oxide gas, produced sleep analogous to that existing in coma, and may end in death."

Here the little dentist went into a discussion on the functions of the nerves, and the effect of the old anesthetics on the system, and their tendency to produce nausea, headache, prostration, aud perhaps death. He wound up by saying that his discovery produced natural sleep almost instantaneously, and the patients recovered of their own accord, invigorated and refreshed. He hobbled into a side room, and soon appeared with a decrepit old woman. He promised to remove all the decayed stumps from her mouth if she allowed him to use his anesthetic

in the operation. He saturated a napkin with a substance that looked like water and emitted a pleasant odor. For an instant he held it over the old lady's nose, telling her to breathe freely, and in thirty seconds she was unconscious. He allowed the napkin to remain, and for over two minutes he worked, extracting sixteen teeth. The patient never moved, and to all appearances she did not feel the pain attending the operation. On removing the napkin, almost immediately she revived, and stepped out of the chair as fresh and hearty as when she entered it.

She said she had a vague idea of what was going on while under the influence of the anesthetic, but could not move hand or foot. She was reminded of a person in a trance, and described the symptoms she experienced as a sort of suspended animation. She said she knew that the dentist was pulling her teeth out, but she felt no pain.

Eight persons were made and kept unconscious from a half to two and a half minutes. With one, the napkin was allowed to remain for six minutes. The patients told stories similar to the old lady's and went away in good spirits. The reporter was the last subject, and these, in brief, were the sensations he experienced:

From the moment the napkin was placed over his face a feeling of unconsciousness came over him, and at the end of the third free inspiration everything became blank. His arms hung at his side, and he could feel that they were there, but they were beyond the voluntary control of the will; a sense of dreamy languor followed, and, as if on the wings of a fleet bird, he was borne through the air high above the earth. The sensation was altogether pleasant. Then the scene changed, and his skull tingled as if a million minute hammers no bigger than fine needles began pounding all at once. They shattered into fragments in an instant, the napkin was removed, and all was over. Recovery was instantaneous, and all effect was gone. The time, taken by one of the physicians, was one and three-quarter minutes.

The little dentist was urged to reveal the component parts of his anesthetic, but he refused, saying that he was too poor; and, as much as he would like to do something for science, he had to think of his hungry wife and children at home. The physicians who witnessed the experiments said the results were marvelous, but as long as the whole thing could not be scientifically explained to the profession at large, they would never accept it. Perhaps it will never receive the just recognition it so richly deserves.—*New York Star.*

The health of the child has much to do with developing sound teeth, and sound teeth in later life repay the debt by aiding good health.

FLAME CONTACT, A NEW DEPARTURE IN WATER HEATING.

THOMAS FLETCHER, F. C. S.

A paper was read at the meeting of the Gas Institute, London, on June 9th, of which the following is an abstract:

It is my intention to prove to you on theoretical grounds, and also by experimental demonstration in such a manner as will admit of no possible doubt, that the present accepted system of water heating, by gaseous or other fuel, is a very imperfect means for an end, and is, both in theory and practice, essentially faulty. My statements may appear bold, but I come prepared to prove them in a manner which I think none of you will question, as it admits of the simplest demonstration. I will, in the first place, boil a specified quantity of water in a flat-bottomed vessel of copper; the time required to boil this you will be able to take for yourselves, as the result will be visible by the discharge of a strong jet of steam from the boiler. I will then take another copper boiler of the same form, but only one-half the surface to give up its heat to the water, and will in this vessel boil the same quantity of water with the same burner in little over half the time, thus about doubling the efficiency of the burner, and increasing the effective duty of the heating surface fourfold, by getting almost double the work from half the surface.

The subject is comparatively new, and my experiments are far from complete on all points, but they are sufficiently so to prove my case fully. As no doubt you are all aware, it is not possible to obtain flame contact with any cold, or comparatively cold surface. This is readily proved by placing a vessel of water with a perfectly flat bottom over an atmospheric gas-burner; if the eye is placed on a level with the bottom of the vessel a clear space will be seen between it and the flame. I can not show this space on a lecture-table to an audience, but I can prove its existence by pasting, with flour paste, a paper label on the bottom of one of the boilers, and exposing this to the direct impact of a powerful burner during the time the water is being boiled, and you will see that it comes out perfectly clean and uncolored. Now, it is well known that paper becomes charred at a temperature of about 400° F., and the fact that my test paper is not charred proves that it has not been exposed to this temperature, the flame being, in fact, extinguished by the cooling power of the water in the vessel. I need hardly remind you that the speed with which convected or conducted heat is absorbed by any body is in direct ratio to the difference between its own temperature and that of the source of heat in absolute contact with it; and therefore, as the source of the heat taken up by the vessel is nothing but unburnt gases, at a temperature below 400° F., the rate of absorption can not, under any circumstances, be great, and

the usual practice is to compensate for this inefficiency by an enormous extension of surface in contact with the water, which extension I will prove to you is quite unnecessary. You will see I have here a copper vessel with a number of solid copper rods depending from the lower surface; each rod passing through into the water space and is flattened into a broad head, which gives up its heat rapidly to the water. My theory can be stated in a few words: The lower ends of the rods not being in close communication with the water, can, and do, attain a temperature sufficiently high to admit of direct flame contact, and as their efficiency, like that of the water surface, depends on the difference between their own temperature and that of the source of the heat in absolute contact with them, we must, if my theory is correct, obtain a far greater duty from them. I do not, of course, profess to obtain more heat from the fuel than it contains, but simply to utilize that heat to the fullest extent by the use of heating surfaces, beyond comparison smaller than what have been considered necessary, and to prove not only that the heating surfaces can be concentrated in a very small area, but also that its efficiency can be greatly increased by preventing close water contact, and so permitting combustion in complete contact with a part of the heating surface. I will now boil 40 oz. of water in this flat-bottomed copper vessel, and, as you will see, sharp boiling begins in 3 minutes 15 seconds from the time the gas is lighted. The small quantity of steam evolved before this time is of no importance, being caused partly by the air driven off from the water and partly from local boiling at the edges of the vessel, owing to imperfect circulation. On the bottom of this vessel is pasted a paper label which you will see is untouched by the flame, owing to the fact that no flame can exist in contact with a cold surface.

I will now take this vessel, which has only one-half the surface in contact with the water, the lower half being covered with copper rods $\frac{3}{16}$-inch diameter, $\frac{1}{2}$-inch centers apart, and 1$\frac{1}{2}$ inches long, and you will see that with the same burner as before, under precisely the same conditions, sharp boiling takes place in 1 minute, 50 seconds, being only 13 seconds more than half the time required to produce the same result with the same quantity of water as in the previous experiment. Though the water surface in contact with the source of heat is only half that of the first vessel, and the burner is the same, we can see the difference, not only in the time required to boil the 40 ounces of water, but also in the much greater force and volume of steam evolved when boiling does occur. With reference to the form and proportions of the conducting rods, these can only be obtained by direct experiment in in each case for each distinct purpose. The conducting power of a metallic rod is limited, and the higher temperature of the source of

heat the shorter will the rods need to be, so as to insure the free ends being below a red heat, and so prevent oxidation and wasting. There are also other reasons which limit the proportions of the rods, such as liability to choke with dirt and difficulty of cleaning, and also risk of mechanical injury, in such cases as ordinary kettles or pans; all these requirements need to be met by different forms and strengths of rods to ensure permanent service, and by substituting in some cases a different form and type of heat conductor. To prove my theory as to the greater efficiency of the surface of the rods in contact with the flame as against that in direct contact with the water. I have another smaller vessel which, including the rods, has the same total surface in contact with the flame, but only one-third the water surface as compared with the first experiment. Using again the same quantity of water and the same burner, we get sharp boiling in 2 minutes, 10 seconds, being an increase of duty of 50 per cent, with the same surface exposed to the flame. The rods in the last experiment form two-thirds of the total heating surface, and if we take, as I think for some careful experiments we may safely do, one-half the length of the rods to be at a temperature which will admit of direct flame contact, we have here the extraordinary result that flame contact with one-third of the heating surface increases the total fuel duty on a limited area 50 per cent. This really means that the area in contact with flame is something like six times as efficient as the other. If you will take two ordinary metal ladles for melting lead, cover the lower part of one of these with the projecting rods or studs and leave the other plain, you will find on melting a specified quantity of metal in each that the difference in duty between the two is very small. The slight increase may be fully accounted for by the difference in the available heating surface reducing the amount of waste heat passing away, and this proves that flame contact, and therefore quick absorption of heat, takes place on plain surfaces as soon as these are above a certain temperature, which, in a metal ladle, very soon occurs. What the temperature is which admits of flame contact I have, as yet, not been able to test thoroughly, and it will need some consideration how the determination of this is to be correctly made; at the same time it is a question in physics which should be capable of being answered.

When we come to boilers for raising steam, which have to stand high pressures, we come to other difficulties of a very serious nature, and require special provision to overcome them. I have found that rods or points, such as I have described, are not necessary, and that the same results can be obtained by webs or angle-ribs rolled in the plates. My experiments in this direction are not complete, and at present they tend to the conclusion that circular webs, which would be

of the greatest efficiency in strengthening the flues, are not so efficient for heating as webs running lengthwise with the flue, and in a line with the direction of the flame.

I will now show you, as a matter of interest in the publication of coal gas as a fuel, how quickly a small quantity of water can be boiled by a kettle constructed on the principles I have described, and to make the experiment a practical one I will use a heavy and strongly-made copper kettle which weighs 6½ pounds, and will hold, when full, one gallon. In this kettle I will boil a pint of water, and, as you see, rapid boiling takes place in 50 seconds. The same result could be attained in a light and specially-made kettle in 30 seconds, but the experiment would not be a fair, practical one, as the vessel used would not be fit for hard daily service, and I have therefore limited myself to what can be done in actual daily work rather than laboratory results, which, however interesting they may be, would not be a fair example of the apparatus in actual use at present.—*Dental Record.*

FILLING MATERIALS.

FROM DENTAL ADVERTISER.

We have extracted, as a curiosity, an article on this subject from the *American Druggist*, for July. It is not imperative that the *American Druggist* should know anything about filling materials, and if a man will only keep silence he may be credited with great knowledge; but when he writes an article apparently only to display his astonishing ignorance, he must expect to be corrected. We give the writer of this article every credit for the points on which he is correctly informed. For instance, he says of oxy-chloride of zinc: "There are two parcels in small bottles, one a powder and the other a liquid." He is certainly right about one being a powder and the other a liquid, but he is mistaken about the liquid being a "parcel in a small bottle." The fact is, the liquid is loose in the bottle. But we give the whole, and append a few corrections. When the errors are crossed out, it will be hard to find much of the original communication.

"*No. 1,740.—Tooth Cement (Dr. L.)*—'Dentists use for temporary filling a compound known as 'oxy-phosphate of zinc,' and another called 'oxy-chloride of zinc.' Of these, there are two parcels in small bottles—one a powder and the other a liquid—which, when mixed in certain proportions, form a paste, becoming hard in a longer or shorter time. What are the ingredients, and why do some samples 'set' more rapidly than others?"

The oxy-chloride of zinc paste is prepared as follows: Mix 1 part of impalpable powder of glass (obtained by elutriation) with 3 parts of finely-powdered oxide of zinc, which had previously been deprived of all carbonic acid gas by ignition. Next dissolve 1 part of borax in the smallest possible quantity of hot water, and add it to 50 parts (all by

weight) of a solution of chloride of zinc having a sp. gr. of 1.5 to 1.6. Keep the mixed powders and the solutions in separate vials. For use, a portion of the powder is mixed with enough of the solution to make a uniform paste, and the latter at once applied. It will set very rapidly, and it is the function of the borax to retard this a little. By adding a suitable proportion of ocher, the mass may be more or less tinted. When it is set it is as hard as marble, and has, in fact, been recommended as a material for making statuary. It is often called Paris tooth cement.

If any commercial samples do not set as rapidly as others, the fault may lie either with the powder or the solution, the former containing, perhaps, some carbonate, and the latter too much borax or too much water.

The 'oxy-phosphate of zinc' paste is no doubt a similar preparation, but we do not know the precise method of preparing it. Perhaps some of our readers can furnish it. The 'diamond tooth cement' is made by rapidly mixing anhydrous phosphoric acid with lime and filling the tooth with this paste, which soon sets into hard phosphate of calcium."

"*1,741—Dentists' Alloy or Amalgam (Dr. L.)*—'Why do some of these alloys turn black in the mouth, while others do not?"

The alloys, or, rather, amalgams used by dentists are of varying composition. The best is made by adding mercury to pure gold (in a heated iron capsule or ladle) till the mass is of a doughy consistence at the temperature of hot water. Other alloys (amalgams) are made of silver and mercury; in others, again, the silver is replaced by zinc, tin, cadmium, bismuth, etc. Next to the gold alloy, the best is one containing gold, platinum and mercury, and next may be placed the copper alloy. All those which contain metals rendered black by sulphur or sulphides, are liable to turn dark. The mercury need not be regarded in this reaction, since it gradually disappears from the surface of the 'filling.' The gold-platinum amalgam will, of course, preserve its color best."

In the first place, powdered glass is not used in oxy-chlorides. It has been proved to be worse than useless, causing increased solubility and disintegration. Ordinary ignited oxide of zinc is not used for fillings, although it may be used as a base for other fillings. Specially prepared and extremely dense oxides of zinc are used, these being prepared either by fusion with a flux, reduction from a zinc salt by heat, or by hydraulic pressure applied to the ignited oxide. Borax *might* be used to control the time of setting if it was necessary, and if the extremely irregular and uncertain action of borax itself could be controlled. As a matter of fact, it is not used because it is quite unnecessary, the setting being quite under control by altering the specific gravity of the liquid and the density of the powder. So much for the *American Druggist* on oxy-chlorides.

"The diamond tooth cement is made by rapidly mixing anhydrous phosphoric acid with lime." This delightfully simple receipt has "stumped the press" ages ago, but that such a mixture is used is news, indeed.

When the writer treats on the alloys for amalgams he begins well, by saying, "they are of varying composition." They are, indeed; but when he goes on to say the best is made by adding mercury to pure gold, he gets at once beyond his depth. The history of amalgams is something like this: In apparently prehistoric times a mixture of finely divided silver and mercury was found to set into a hard mass. Some one found that the silver could be adulterated with an equal weight of tin and still retain the power of hardening. This was a "great" discovery and the inventor diluted his silver and doubled the price—a fourfold advantage. When his silver ran short he used dollars, found the copper made his amalgam a little harder, and here was another grand discovery. Some one then discovered that the zinc he made his dies of could be used for letting down the silver, making the amalgam slightly soluble, and thus getting a self-cleansing face on his plugs, solubility being of course no objection—in fact being good for trade. Then came the great cadmium revolution of Dr. Evans, which was going to perform wonders. The wonders it did perform in the way of disintegrating, and turning teeth a bright orange yellow, were as unexpected as they were undesirable, and shortly afterwards we find makers carefully advertising the fact that their amalgam contained no cadmium. The alloy of precipitated copper and mercury, known as Sullivan's amalgam, and also the alloy of precipitated palladium and mercury, were both independent discoveries, and as regards absolute permanence in the mouth both these alloys stand in the first rank. The power of a small percentage of platinum to cause rapid setting and permanence of form of plugs, discovered by Mr. Fletcher, of England, has been largely utilized by amalgam makers. Even at the present time those scientific experts who are examining amalgams do not know, as a rule, what properties they need to test for, and we have the curious result that men who should know better, waste their time looking for infinitesimal shrinkages and expansions, which are of no importance even if carried to the twenty-fifth decimal, and they utterly ignore the one important point—the power of an amalgam to permanently retain its shape at the temperature of the mouth.

Our contemporary surely extracts his facts from his imagination, assisted by the extraordinary advertisements intended to mislead the innocent dentist. When the writer goes on to say the silver in amalgamas is replaced by tin, cadmium, bismuth, etc., he, as the English would say, opens his mouth to put his foot in it. An alloy in which the silver is replaced by tin or bismuth, has no power of setting hard and is totally useless, as is also an alloy of gold, platinum and mercury which he recommends. As to cadmium, there is no maker of amalgam alloys alive who dare admit that he uses this metal, and no one

with a reputation to lose who dares use it. A malleable amalgam was introduced some years ago by an English maker, this malleability being caused by cadmium, but he very soon withdrew it, and has tried to get his business back by advertising another wonderful alloy, which has nothing new in it except the very unusual amount of profit he obtains on what he does sell.

Our contemporary crowns all by stating that mercury need not be regarded in the reaction, as it *gradually disappears from the surface of the filling!* With this we will leave him, merely expressing our opinion that he has wasted valuable time in writing imaginary recipes.

WANT OF ROOM FOR THE ERUPTION OF THE PERMANENT TEETH, ESPECIALLY THE THIRD MOLARS.

DR. C. R. BUTLER, CLEVELAND, O.

[Read before the Ohio State Dental Society.]

Rarely do we see any marked irregularity in the arrangement of the temporary teeth. It is not so with the permanent. A fairly arranged set of teeth at the age of eighteen or twenty years among Americans is the exception.

The first molars of the permanent set are generally erupted at the age of six years; the crowns are rather larger than are those of the other molars. This serves an important function. Their roots being formed before the temporary teeth are shed, they sustain the force of mastication between childhood and youth, thus giving the normal stimulus to the salivary glands, that the food may be thoroughly insalivated before deglutition. They also prevent pressure on the partially developed teeth of replacement. The jaws having sufficiently elongated, these teeth take position just back of the twenty temporary.

From the age of six to twelve the jaws elongate backward to make room for the second and third molars. As the third under molars are situated in the angle of the inferior maxillary, much discomfort, and often serious trouble are experienced, for lack of room for their eruption.

The general structure and arrangement of the thirty-two teeth give a fair index to the anatomical and physiological make-up of the individual.

The shortening and narrowing of the lower portion of the face, and the want of room in the maxillary bones, in the American race of to-day, are apparent; and the many ailments that confront the general practitioner and specialist, are more and more of a nervous character.

To ascertain the appropriate remedies and methods, and the best way of correcting deformity should be our prime object.

"Behold how great a matter a little fire kindleth!" and a tooth

is often the cause of local and general trouble. The typal number being still retained, and the size of the teeth not decreased in proportion to the restricted territory, a writer has claimed that we have, in these facts, the explanation of many cases of irregularity and decay of the teeth. The trouble lies in the inheritance of incongruous jaws and teeth from the parents. The father may have large teeth in a large jaw, and the mother small ones in a small jaw. While both parents may have perfect sets of teeth, the inheritance may be most unfortunate for the children. If the teeth are inherited from the father, and developed in a small jaw copied from the mother, sad results are seen in the mouths of the children.

In consequence of the limited space between the second molar and the base of the outer, or vertical portion of the ramus, the erupting third molar is forced against the lateral ends of a fixed circle. If these teeth do not appear till the age of eighteen or twenty, or even when they come earlier, the inferior maxillary having become well solidified, and with the preceding teeth crowded, serious inflammation is caused.

Text books and periodical dental literature give little suggestive treatment for such cases, except the removal of the second molar, to make room for the imprisoned crown. This treatment shows as little judgment as amputation in fracture of the forearm.

To sacrifice a second molar to make room for a tooth on the extreme end of the jaw, with imperfect occlusion, is unwarranted, except in extreme cases.

The dento-maxillary nerves, being distributed from the Gesserian ganglion, it is easy to see how reflex irritation is caused by one of these offending teeth.

Situated as these impacted teeth are, it is not strange that we should often find them the cause of throat troubles, deafness, stiffness of the muscles of the neck and face, facial neuralgia, local paralysis, prostrating pain, with severe abscess, and other local and systematic disturbances.

Young women are often annoyed by these troubles. I could mention special cases in which the distress was great. One had, for some time, complained of a dull pain in the back of the head and neck, had often difficulty in swallowing. The third molars, above and below, were removed, and in a few days there was no further trouble in swallowing, and she experienced general relief. In two other cases of similar trouble, relief was obtained by removing third lower molars.

The upper third molars often demand attention. For want of room they are sometimes forced outward, causing muscular irritation by excoriating the inner portion of the cheek; but they are more easily removed than lower third molars.—*Ohio Journal.*

DENTAL CHEMISTRY.

DR. S. B. PALMER, SYRACUSE, N. Y.

[Read Before the Fifth District Dental Society of the State of New York.]

Chemistry is the science the composition of substances, and of the changes which these undergo.

Consequently it explains modes and preparations of composition, and the process of decomposition and decay, and also the nature of the elements and their compounds. Dental Chemistry, taken in the operative and mechanical department, involves every branch of this science.

Chemistry teaches that all substances of which we have any knowledge is composed of about sixty-five elements. From this small number, by various combinations and proportions, come the countless mineral, vegetable, and animal forms, which comprise, surround, and inhabit the globe. About three-fourths of these are classed as metals, and one-fourth non-metallic. In their pure state little knowledge would be required to classify them accordingly.

The elements which enter into the dental organs probably do not exceed a dozen. In fact, it is claimed that thirteen only, called zoonic elements, taken from both classes, form all the structures in which life is manifested.

Leaving out proportions, Dental Chemistry teaches that human dentine consists of cartilage and vessels, phosphate of lime, fluorid of calcium, carbonate of lime, phosphate of magnesium and soda, with chlorid of sodium. Those only who understand chemistry, know by this statement what simple elements enter into dentine or other portions of a tooth. The fault is not with the stinted analysis, but with those who cannot comprehend the constituents of the compounds given. The chemist would at once see by this analysis that dentine is composed of phosphorus, flourin, calcium, carbon, magnesium and sodium.

Let us analyze carbonite of lime, a component part of the teeth, also of tartar and common limestone and marble. Take a piece of marble and apply heat as is done in lime-kilns, and we have two unlike substances—a gas known as carbonic acid gas, and quicklime. The gas when treated by heat, according to chemical instructions, is separated into carbon and oxygen. Send a current of electricity through the quick lime and there appear the white metal, calcium, and oxygen; with this all further attempts at division fails, so that we say carbonite of lime is composed of carbon, calcium, and oxygen, three simple elements. Thus the other compounds of tooth structure, chemically treated, at once reveal their constituents or simple elements. By reversing this order compounds are formed from simple elements. This is called synthesis, going from simplicity to complexity, not only to

produce compounds which have been analyzed, but to form new not found in nature, as glass and soap.

There appears to be no limit to the combinations and changes which may be produced by the union of even the thirteen elements entering into living forms. In the characters representing the Morse Telegraphic Alphabet, we have a dot, and a short and a long dash. By various arrangements of the symbols, all the letters and numerals are represented so as to give expression to the greater portion of our daily news. So with the elements. By the laws of affinity they unite in definite proportions, which may be determined with mathematical accuracy. What affinity is we cannot tell; it is a force to be classed with cohesive gravitation, magnetism, etc.. The combination of elements often produces unexpected results, and furnishes substances unlike their constituents, or even anything found in nature. Sand and alkali produce glass; alcohol and lime give chloroform; each wholly unlike its constituents. Again, sulphur and quicksilver produce vermilion, the coloring matter for red rubber. Elements combine in different proportions, giving very different compounds, yet each compound has its exact proportion. Nitrogen and oxygen, which are tasteless, when combined in equal proportions give nitrous oxid, which is sweet. One part nitrogen and five of oxygen give nitric acid, which is intensely sour.

Substances combine under influence of attraction or affinity. Dentine is composed of phosphorus, fluorin, calcium, carbon, magnesium and sodium, not taking into account oxygen, hydrogen, and nitrogen, found in the cartilage and vessels.

We must bear in mind that elements combine according to their affinity for the elements present. Whenever it occurs that a new element is introduced, with greater affinity for any one in the compound, the old relations are broken up and a new compound is formed. To illustrate; alcohol and camphor-gum will hold peaceable relations unless water be added; then the alcohol will unite with the water, and at once reject the camphor, which will appear in white flakes on the surface. Thus it is easy to understand how acids affect tooth structure, and quite as easy to account for the presence of acids, when we consider they are the result of fermentation. In the laboratory, cavities cannot be produced by immersing teeth in acid, but when the experiments are conducted on the principle that governs in the oral cavity, they furnish like results. The simplest experiment is accomplished by the electric current in a neutral or slightly alkalin solution, one pole of the battery furnishing acid to dissolve the dentine, while the lime is deposited at the other pole. Thus we may understand the process of disintegration where food is confined between teeth or in cavities. Decomposition goes on undisturbed by the surrounding fluids.

In teeth which are filled with metallic fillings, unless certain conditions are observed, decomposition continues. Dryness is essential; that is, if the plug is imperfect, or the dentine too porous to prevent fluid circulation, thermal changes through the moisture excites sensibility, and in time destruction of the surrounding tissue follows. Amalgams that contain copper and silver, often by the oxids and sulphids arrest decay in frail teeth, but good amalgams, as well as gold, need to be insulated, or so inserted that the porous dentine and the irregularities and angles of the cavity are filled with some indestructible varnish, the only method to my knowledge which will preserve an amalgam filling bright on the inner or wall surfaces. One thing is certain; when amalgam remains bright next to dentine, there is no decomposition going on.

Dental Chemistry as a study is greatly undervalued. Organic chemistry should be taken into account in connection with histology and biology, by which more light might be gained respecting the growth and absorption of the dental organs.

Because bone is not an electrolyte in the laboratory, and cannot be deposited on other articles by the electric current, like most metals, we ought not to declare the principle false in biology. It is not my intention to create a "New Departure" in the process of the growth or absorption of dentine. We have only to add to the principles now understood in physics what may be understood respecting vital force, to enable us to comprehend this subject which is yet but a theory, and not satisfactorily explained.

A knowledge of organic chemistry, electro-biology, and the electro-vital currents, would give a comprehensive mind a definite idea of the principles and process of the growth of the dental organs, including exostosis and absorption, and not less the breaking down or building up of dentures according to constitutional changes. The key note is polarity; polarity of the elements furnished in the blood. It is well known that reversal of the current would take from the article being plated, and the metal thus taken would be deposited on what before was the electrolyte, at the other pole of the battery.

Apply this principle to physiology, where other than metallic elements are influenced by electro-vital currents, and we may better comprehend the methods by which organs of living bodies undergo changes.

Thus it may be seen that Dental Chemistry, instead of being but one division of the four defined, embraces all, giving ample opportunity for study and investigation far beyond anything to be found in text-books, or even recorded in dental literature.—*Independent Practitioner.*

Voice of the Teeth.—"*You* must educate or *we* must perish."

Amalgam and Salivation.—An eminent physician wrote to me that a patient of his, who was also a patient of mine, was suffering from salivation, for which he could find no cause. He wanted to know if this salivation was not caused by an amalgam filling which I had placed in a tooth. The patient confirmed the statement about the salivation, which she said was excessive. On examination I found the saliva markedly acid, while only a few weeks before it had been normal, and several teeth had been softened at the necks in that short time. I did not find any increase in the amount of saliva on this examination, but its acid condition was explained to the patient and a prescription given her. I saw the physician a short time after this, who said he had tested her saliva, and finding it not acid, he had advised her not to use the prescription. I saw the patient the same day, and again found the saliva very acid. The rubber was applied and the teeth prepared for filling, the operation lasting an hour and a quarter. During this time the amount of saliva secreted was only six drams,—and this, too, under the stimulus of excavating sensitive teeth. This could hardly be called a marked case of salivation, even if there was an amalgam filling in the mouth.—W. H. ROLLINS, Boston.

How many people ever think of the weakening effect of the word "very" in talking or writing? There are but few cases where it strengthens an idea. For instance, take this sentence:—"Mrs. Blank is a very fine writer." How much stronger the sentence is without the "very." To say that a man is very well known indicates that he is less known than one of whom we say, "He is well known." This weakening element is a characteristic of the word "very." The same might be said of all superfluous words, though few, if any, are so persistently of that character as the word in question.

Give children proper instruction and set them a good example, and you are laying the foundation for lives of usefulness. These must be grounded in good health physically.

Index to dental periodical literature, by Dr. J. Taft, published by P. Blakiston, Son & Co., Philadelphia, is an exhaustive summary of dental periodicals published and important papers found in them. Dr. Taft has kept from the beginning of dental literature a good account of the most important, and in this book so arranged it that the discussion of any subject may be easily traced.

Progressive and retrospective physiological metamorphosis of the jaws and teeth, is the title of an able essay by Dr. J. J. R. Patrick, Belleville, Ill.

AMERICAN DENTAL ASSOCIATION, LAST MEETING.

[Editorial in *Dental Eclectic.*]

To be sure many of the old things were said in an impressive way, and some of the old speeches were revamped and newly turned for the occasion, but there certainly was a most unaccountable lack of originality and token of primitive research for a meeting of the best men in dentistry. We have become habituated to the boast that dentistry is the most progressive of all the sciences, and that our rate of progress is astounding. We have just passed another anniversary, and what has been done to make good this vaunt?

During the past year the various dental journals have published to the world some meritorious papers—essays that indicated a depth of research, a breadth of investigation, that is creditable to us as a profession. But with two or three exceptions what evidence of study was presented at Niagara? There should have been a plethora of original papers, so that it would have been impossible to read them all except by title. In reality there was a dearth of essays, and one almost sighed for another chapter of Stephen Pearl Andrews' "Alwato" to break the monotony.

The above is an extract from an editorial in the September number of the *Independent Practitioner.* Dr. Barrett evidently does not hesitate to speak openly his mind, and we are glad that he has done so if thereby a reform in these society meetings may be established. We must confess however to a feeling of sorrow and disappointment on reading Dr. Barrett's article. We had always expected so much of the American Dental Association, and we think much should be expected of it and its proceedings.

But it seems that the great failing of all our association meetings has manifested itself in the proceedings of the American, that of dearth of originality and insipidity of a large part of the papers and discussions. The many associations organized throughout the country are productive of incalculable benefit to the profession, but how much more useful would they become if more attention was paid to the preparation of papers and the careful discussion of the intricate problems of the science, than the rehash of old matters and the clothing in specious language of threadbare and worn out subjects. Who shall suggest a remedy and how shall it be applied?

Deaths of Eminent Men.—The year 1886 will be remarkable for the great number of deaths among the eminent men in all callings of life. Death has been especially active in the medical profession, such eminent characters as Carpenter, Dalton, and Flint having obeyed his mandate. We are again called on to chronicle the death of one of world-wide fame, that of Dr. Frank H. Hamilton, of New York.—*Dental Eclectic.*

SORE MOUTHS FROM RUBBER.

DR. J. A. ROBINSON, MORRISVILLE, VT.

Editor ITEMS:—

In reply to your foot note on page 441 of October ITEMS, I will say: Having been in business but ten years, I can not say much from long experience; but I do say I never knew of a case where soft and sore mouths were caused by wearing a rubber plate. There are two ladies here who have worn their rubber plates for more than twenty years and there has never been any signs of trouble. I made my father a set a few weeks ago to replace a broken set, and his mouth was firm and well, and he has never had any trouble. My mother wore her rubber plate twenty odd years, both day and night, and her mouth has always been firm and in an exceedingly healthy condition.

I think I shall use the gold linings for plates: not on account of the rubber causing any trouble, but for the money I make out of it. Why not be honest aboutit?

I should say to Dr. Farnum (in Aug. No.), that the cocain had nothing to do with the hysteria.

My way of finishing rubber plates is to first file, then scrape and sand paper with No. ½, instead of No. 1½, as some one writes, and then with No. o sand paper. Now oil the plate with sweet oil, and use the old pieces of No. o sand paper, sometimes adding a little fine pumice stone, then I polish sometimes with coarse and soft brush wheels and chalk, and sometimes put on more oil and plaster-paris or pumice stone and rub the plate with my thumb.

Who uses wet heat for closing flasks, and what is the method?

What is "ceroline;" bare plate material?

Saliva and the Teeth.—Leaving out of account, for a moment, the difference in resisting power of teeth, and also the amount of care used to remove food, we must seek in the oral fluids for the causes of this difference. It has been stated that acid eructations from the stomach are a cause of decay, but I do not think this a factor of importance. Saliva has many functions, the most important of which is its protective action on the teeth; for when saliva is normal it is difficult for teeth to decay. It prevents decay in two ways,—first, by washing away the acids formed in fermentations; second, by combining with these acids, making them harmless. Normal saliva is alkalin, not neutral, as has been many times stated. A neutral or acid saliva in man is pathological. These facts cannot be too strongly empasized. For a short time, early in the morning, the saliva may be acid, but this is due to carbonic acid, and soon disappears.—W. H. ROLLINS, Boston.

MISTAKES IN PRACTICE.

Here is a suggestion from *The Medical World* applicable to dentists, which we can adopt. Who will speak first?

"We all make mistakes occasionally, and every error should be made the source of useful knowledge. We never forget what we learn in this way. But the benefit is generally confined to one's self, as such things are rarely told, much less published. We have been trying to encourage our readers to give their unfortunate experiences, as well as their successes, that all may have the benefit of them. We have just received a letter from a very excellent physician who agrees to "start the ball rolling," but requesting that his name and address be kept private, as mischief-makers might take a mean advantage. This is a very reasonable and proper request, and will be granted to any who is willing to give to the profession the lessons taught by mistakes. Now let us see if we can't have many confessions, bearing with them useful and impressive lessons."

Animalcules.—In the larger world we have poisonous plants, and those which possess medicinal properties, while others are inert. So with the fungi of the mouth; some produce one thing, some another. We do not know the physiology of the most of them. Though we have studied a part, there yet remains a great field for research. We know comparatively little of the conditions under which these fungi are formed. They seem to present widely different phenomena. In one month they grow and produce a great deal of acid, while in another their growth is very slow. Under certain circumstances these micro-organisms attenuate, or lose their virulence, as Pasteur has demonstrated. Perhaps, when we sufficiently comprehend their growth, we may be able to attenuate them out of existence. We find that some organisms grow freely in beef-broth, while others demand the presence of peptones. In some, the animal body is their natural habitat, while others perish when introduced into a living organism.—*Dr. G. V. Black.*

Crown Work is becoming more popular each year. Too much has been said of the construction of crowns, and not enough about the preparation of the root. It requires shaping to a definite form, and corundum wheels and files are not sufficient for this work, as the roots are conical. Unless this form is materially changed the band is not in contact with the tooth at its distal edge, and it acts as a continual irritant. The root should be of the proper shape and the band then carefully fitted. It should be tried on, and the interior then wiped carefully. If now there be a leakage, the band should be removed and made smaller.—*Dr. Hanaford.*

BROMIDIA.

In the decline of life, when exhausted nature habitually repels the restorative influence of sleep, there is nothing so suitable to induce healthful repose as one-half to one teaspoonful of bromidia, at bedtime. It may be taken for years, in the same dose, with the same effect and without detriment.—*Am. Med. Journal.*

Our Current Literature.—I would urge on all dentists the advantages of subscribing for some good dental journal. There are several that are worthy of a greater patronage than they get. Gentlemen, I think I speak truthfully when I say there are members of our profession who do not take more than one dental journal; and alas, are there not many who take none? Can such men learn much of their profession? can they advance with the great army of our brotherhood from the meager experience of an office or country practice? No; emphatically no! Gentlemen, none of us can learn so much from experience or otherwise that we cannot be taught. The cheapest school, the best methods, are to be found in the current literature (dental journals) of our profession. Besides, it will pay frequently a hundred fold. That alone ought to be a stimulous for all to patronize our dental journals liberally.—*E. E. Spinks, Meridian, Miss.*

It should be remembered that all life is one, throughout the whole creation. Digestion in the vegetable world does not materially differ from that of animals. The lower forms of conscious existence have essentially the same general structure with man, and their life is one with ours. Food pabulum, is taken into some form of a stomach, and it there meets with a digestive fluid which dissolves and fits it for assimilation, and it is finally woven into tissue, which becomes in time effete and is cast out as urea. Every form of life has within it the power of molecular changes and reorganization. The atoms are arranged and rearranged round a common center, first as tissue, and again as waste products. The *Torula*, or yeast plant, reorganizes pabulum, with the consequent formation of alcohol and carbonic acid. In the human digestive tract the fungi form peptones, and convert starches into glucose and levulose, and finally, by some mysterious process, produce lactic acid, as has been abundantly proved by Dr. Miller. —*Dr. G. V. Black, Jacksonville, Ill.*

Wire Ligatures, Dr. G. S. Staples, Sherman, Texas, tells the *Southern Journal* that he finds common binding wire good,—much better than the ordinary clamps—for buckle and labial cavities, specially of bicuspids.

MAKE THE OFFICE BRIGHT.

It will bring us in many extra dollars, to keep an attractive office. Only a few days ago a lady paid me a compliment, by saying my "office did not look like an office; but more like a parlor." This is what we all should wish. Make the office look as little like an office as possible; keep all appliances out of sight. Many a timid patient has been frightened out of a dental office by seeing instruments lying about. Have plenty of bric-a-brac around to attract the patient's mind, as far as possible, from the operation. Cheerful reading matter, pictures, flowers, etc., all have a pleasing effect in that direction.—*Items of Interest.*

[We once entered a doctor's office. Dark paper overed the walls. The paint was dark. Dusty books, grim cases of instruments, a few bottled specimens, a skull, and a hideous papier-mache ear, of heroic dimensions, constituted the decorations. One window gave light, and this was obscured by heavy maroon curtains. The doctor was a tall, grave, spectacled gentleman, with deep-set eyes, which never smiled. To crown all, a huge *owl* occupied a cage in a dark corner, and hooted cheerfully on our entrance. Now I knew that man well—knew him for an upright man and a physician of unusual skill; but I tell you, when I got out of that office I felt as if I had escaped from some deadly peril. And yet I am by no means timid. I have faced the "dweller within the threshold" without fear.

I longed to say to the doctor: "Get some whitewash on these walls, throw away those horrible bottles, cover up your knives, tear down those curtains and let God's sunlight in, take down the anatomical chromos, and put up some prints of horses or French actresses, and kill that owl! Then meet your patients with a happy face, and they'll be glad they came."—*Ed. Medical World.*]

Ancient Dentistry.—Dr. Morrison, St. Louis, says Dr. E. Waller, of Cairo, Egypt, states that no well authenticated case of gold filling has been found in the teeth of mummies, and that the superior cement reported to exist in their teeth has proved to be simply tartar. He adds that the specimens of so-called "bridge work" reported to have been found, are very crude attachments of artificial teeth by gold wire, and from long use in the mouth are thickly coated with calcareous deposit. They are in no wise comparable with the artificial productions of to-day.

EDITOR OF ITEMS OF INTEREST:—Is there a way by which a rubber plate that has become loose can be made to fit, without making a new plate. C. E. DAVIS.

PAIN—IMAGINARY AND REAL.

The dread of a dental operation is often so intense as to cause greater distress than the operation. But I am not prepared to say the mental suffering is always in proportion to the caliber of the mind. Sometimes we see persons of large minds, with a predominance of "will power," who are able to control themselves, though hurt immensely. Others can scarcely be persuaded to visit a dentist's office. Many would willingly pay for a set of teeth if they could have them without the excruciating pain of extraction. Such persons do not belong to that class having the most refinement or the greatest mental capacity. Much of the pain is undoubtedly imaginary. In advance, the fear of suffering is terrifying; but the reality is much less than the anticipation.

A little girl was brought to my office to have the four upper incisors removed to make room for the approaching permanent teeth. She had never been to a dentist before, but had a tooth extracted by a "doctor;" and the memory of that operation was so vivid, she could not be induced to submit to the extraction of another under any consideration. She came into my office only by compulsion of her mother —yelling and screaming at the top of her voice! She had been deceived once and had no confidence in anything told her now. I am always opposed to force or compulsion or deception in a case of this kind. Seeing the hopelessness of persuasion, I quietly and unobservedly, while she was sitting on her mother's lap, let her breathe a little ether. She soon took a little nap, and I extracted her teeth without pain to body or mind. SILAS MARION.

Caries caused by fermentation.—Robertson, in 1835, said caries was produced by fermentation, but he did not comprehend the principle of the process. We have nearly all believed caries was some kind of a chemical process. Dr. Watt declares this, but he thinks the acids are produced by another process, and believes them to be inorganic in their nature. That much he affirmes through following Liebig. The germ theory is not new, but the knowledge of the manner in which chemical processes are brought about is modern. We had long been searching for the origin of the acids which are found in the mouth. We now know that when many of these mouth fungi are grown in the proper medium, they produce an acid which dissolves the lime salts. As the fungi would not proliferate in an acid medium, they would be self-limiting, were it not that the medium is again rendered neutral by the uniting of the acid with tooth bone, which allows the organisms to penetrate further, and again carry on their destructive work. They grow as vines would grow in a lattice work, the acid

preceding them continually. Some species produce a gelatin, which acts as a protection. They crowd and dilate the dental tubules, and it was this appearance which Tomes saw, and pronounced a zone of resistance. Leber and Rottenstein carried on the work of observation, and made important additions to our knowledge. Milles and Underwood did excellent work, but they failed to study the physiology of the fungi. Miller did this, and he first triumphantly demonstrated the products of the organisms, and this, you will allow me to say, was the most perfect work of the kind that the world ever saw. His observations were so scientifically conducted, and the product so carefully analyzed, that he left not a hook on which a tenable objection could be hung.

These acids are formed in the mouth and act on the teeth while in their formative state, and we know that chemical combinations are most powerful in this nascent condition. If a man fails to eliminate the effete matter, he is poisoned by it, and this is true through all nature. So, if the acids of these organisms be not neutralized, they are suffocated in their own excrement, or product.—*Dr. G. V. Black.*

LABARRAQUE'S SOLUTION.

[Editorial in *Ohio Journal.*]

This valuable and convenient disinfectant, bleacher, etc., is not properly appreciated, either by physicians or dentists. Druggists keep for sale what is in demand; and it is not uncommon, in a place with three or four drug stores to find it conspicuously absent from the shelves of all, or if on hand, so deteriorated by time as to be almost useless. Lately, however, we have been quite fortunate.

When your patient has a very offensive breath, under a pretense of making the operation less unpleasant, put a very few drops of it into peppermint water, or even into cold water, and have the patient use it as a gargle; and you will find you have done yourself a kindness.

If your own perspiration is offensive, as may be even with good care, a few drops of the solution will at once destroy the odor. Some have trouble with their feet, some with their armpits. Scarcely any of these odors need trouble any one, if he has this solution on hand.

We have told before how this acts as a chemical reagent. But it is probable, by trying to make this more plain and clear, we can induce some to use it who have as yet treated it with neglect.

The active principle in the solution is a salt called the hypochlorite of soda. Hypochlorous acid is composed of one equivalent each of chlorine and oxygen. These elements are both so highly electronegative that they will not combine directly, and unless they are held together by combining the acid with a base, they separate spontaneously.

Carbonic acid in the atmosphere and from other sources, takes the soda and that sets free the hypochlorous acid, and the oxygen and chlorine separate, and these two powerful elements, in their active state, are the disinfecting and bleaching agents. Thus it does double duty, the two elements having equal power.

At a meeting of the American Dental Convention in New Haven, the subject of bleaching came under consideration, and the inquiry was raised as to how chlorine bleaches, and a professor of chemistry present said this was a great mystery, for the liquid chloride of soda is the great bleacher, and it does not bleach as chlorine. But from the above it will be seen, though it bleaches as chlorine, that is but half the story, inasmuch as it bleaches as oxygen too.

NOTES ON ENGLISH DENTISTRY.

Our American advertising dentists could learn a thing or two from the sons of Albion, were they in search of information. The marvelous things they tell in newspapers of their exploits and their own "patent" "soft," "easy-fitting" "cushions" for "tender gums," and the brushes, powders, and elixirs which they have in hand, and other allurements for the money, are too numerous to mention. These charlatans are a class by themselves.

The English operating room—except the favored few—is not as easily entered as are ours. Our own easy good-nature and carelessness of the feelings of our patients, permits us to open the door of our operating room to nearly every caller, on the most trivial pretext. They are more careful in this respect. We ought to be.

When one enters a dental goods establishment and asks for anything new, they immediately show something from America. But by persistent questioning and keeping the eyes open, one will finally see a number of inventions and improvements on American instruments which cannot be found in America, because they are contraband. On account of the murky atmosphere in London, dentists either have to operate but few hours daily, or use artificial light. Hence there are many forms of reflectors and globes which we are unaccustomed to see. I found better nerve extractors than we can get at home; likewise syringes, explorers, files, and many little odds and ends which have to be picked up here and there as you see them; for, singular to relate, many of my choicest "finds" are not in catalogs or in the advertising pages of any dental journal. Everywhere I was most courteously received and hospitably entertained, and if I have seen some things to criticise I have been equally unsparing of things and customs at home.—*Independent Practitioner.*

TREATMENT OF ERYSIPELAS WITH CREOSOTE.

Dr. H. J. Fox, writing in the *St. Louis Med. Jour.*, May, 1886, claims that creosote may be regarded almost as a specific in the treatment of erysipelas. His manner of application is to keep the parts constantly covered with cloths wet with a solution of 6 to 20 drops to the ounce of water. In ulcers or wounds it may be used in the form of a poultice by stirring ground elm into the solution, the strength to be regulated according to the virulence of the attack. Ordinarily, 10 drops to the ounce is strong enough for the cutaneous form of the disease, and in dressings for wounds or recent injuries. If the inflammation threatens to spread rapidly, it should be increased to 20 or more drops to the ounce of water.

The antiseptic properties of this remedy render it of additional value, as it will certainly destroy the tendency to unhealthy suppuration, and thus prevent septicæmia.

In the treatment of hundreds of cases of erysipelas, according to Dr. Fox, but a single fatal case has occurred, and that one in an old and depraved system. In the less violent attacks no other remedy was used, but where constitutional treatment was indicated, the usual appropriate tonics were prescribed.

In the City of Philadelphia it is stated there are eight women physicians who have an annual practice of about $20,000 each; twelve whose income averages above $10,000 each; twenty two who admit that their annual resources from their profession is above $5,000 each.

The Chicago Dental College has a fine opening this fall. It has one hundred students to start with, and a prospect of a third more.

Dr. Haskell writes us:

Our new rooms are not surpassed by anything in the country. All our floor, the sixth, of a business block, reached by elevator, open on three sides, together with skylight. The lecture room is the only one not on the street. Its appointments are complete in all respects.

Editor ITEMS OF INTEREST:

The fourth annual meeting of the Northwestern Dental Association was held in Fargo, Dak., July 27 and 28, 1886. A very pleasant and profitable meeting. Officers for the ensuing year: President, Dr. H. L. Starling, Fargo; secretary, Dr. S. J. Hill, Fargo.

A sage once wrote to a popular doctor, "Considering all our ailments, it is a question with me whether the pleasures of life repay the liver."

The doctor wrote back, "That depends on the *liver*."

For Our Patients.

INSOMNIA.

O God of Mercy, give me sleep,
And let this weary brain have rest!
Send down Thy white-winged doves of peace
With comfort for this troubled breast.

O throbbing brow! O beating heart!
O pulsing veins be calm and still!
O tensing nerves relax thy strain,
And fight no more this struggling will;

O floods of thought that fill my brain—
That threaten to engulf my soul;
O waves of words that swell and flow,
On ebb-tides ride and backward roll!

O restful slumber, now, I pray,
Come where sad vigils lone I keep;
These lifted eye-lids, let them droop—
O God of Mercy, give me sleep!

—*John Wentworth in Good Housekeeping.*

CAN IMAGINATION KILL?

A young woman in Hackney, Eng., recently took Keating's insect powder with suicidal intent, and actually died. Dr. Tidy, an expert chemist, was employed to show what the ingredients were which produced the death. He reports the powder perfectly harmless, and that the deceased came to her death from her imagination that the powder was a virulent poison.

This brings to our mind, says the *Lancet*, two remarkable instances of what may be regarded as practical jokes with melancholy terminations. A convict was delivered up to the scientist for the purpose of a psychological experiment. The man was strapped to a table and blindfolded, ostensibly to be bled to death; a siphon containing water was placed near his head, and the fluid was allowed to trickle audibly into a vessel below it, at the same time a trifling scratch with a needle was inflicted on the culprit's neck; it is said that death occurred at the end of six minutes. The case of a college porter is also one in point. The students entrapt him into a room at night, a mock inquiry was held, and the punishment of death by decapitation was decreed for his want of consideration to the students. The supposed earnestness of his tormentors, the sight of an ax and block, with subsequent blindfolding and necessary genuflexion, a smart rap with a wet towel on the back of his neck was followed by the picking up of a corpse.

ADVICE TO THOSE WHO WEAR ARTIFICIAL TEETH.

The varied scenes and trials through which every one must pass before artificial teeth is necessary, are not easily forgotten. They remember how (in many cases by neglect) one tooth after another decayed, till the nerve became exposed and ulcers formed, producing the most excruciating pain; but now the last offending member has been extracted, and "my troubles are ended. I can now have artificial teeth in every way as good as the natural." To correct some erroneous opinions on this point is the object of this article.

Artificial teeth properly made will answer many purposes of natural teeth, but no dentist can insert teeth which will answer *as well* as natural teeth.

There are many difficulties attending the wearing of artificial dentures which, in the main, by patience and perseverance, may be overcome:

1st. The presence of the plate in the mouth at first, specially when the patient has been without teeth for a long time, is a source of inconvenience. A few days of patient use will remove this trouble.

2d. Many complain of the plate chafing the gums, producing soreness. This difficulty comes mainly when the plate is inserted soon after the teeth are extracted; the gum heals over the sharp, bony points of the sockets; the plate pressing on the gum causes these points to cut through to the plate; in a few days these points will absorb, the gum heal, and the plate will be worn with ease. If the edge of the plate cuts into the contiguous muscle, of course this edge should be cut back.

3d. Others complain that the plate produces an unpleasant taste in the mouth. This may be because it is made of base material; when good material is used, such as continuous gum, gold, or vulcanite, this difficulty will not exist, if the plate is kept clean. When eating, fine, starchy particles of food will adhere to the plate; if not removed, it will soon sour, producing an unpleasant taste. The plate should be cleansed after each meal.

4th. The difficulty most complained of, specially in full sets (and *partial* sets where clasps are discarded) is the inability to use the teeth, when first inserted. This difficulty occurs in every case to some degree, and to overcome it, much depends on the patience, perseverance, and aptness of the wearer. To be more explicit: the upper plate is held up by suction, with a force varying from eight to fifteen pounds. The main object of this suction is to keep the plate from dropping when speaking, laughing, or eating.

The teeth are required to be set on the plate at an angle of from ten to twenty degrees. The force of an ordinary bite is about fifty

pounds, which, if applied to the front teeth at this angle, in the same manner in which we would bite with the natural teeth, would, of course, overcome the eight or fifteen pounds atmospheric pressure, causing the plate to tip. The same is true in chewing on one side of the mouth. To remedy this difficulty, it is necessary for the patient to learn to chew on both sides. To so learn this process, till it becomes a habit, usually require some time.—*Allport's Dental Journal.*

A "palindrome" is a sentence that reads the same forward and backward. One of the best is from the Lowell *Courier*, "No, it is opposition." The Detroit *Free Press* says: Why don't they get one of some length, say like this: "Snug & raw was I ere I saw war & guns." One of the most celebrated is: "Lewd did I live and evil did I dwel."

"Pa," said Bobby, sleepily, "can't I ask you one more question, if it aint foolish?" "Yaas, one more." "How much older is a ripe old age than a green old age?"

FROM "HEALTH AND HOME."

Many people think a decayed tooth once filled should last a lifetime, and are inclined to blame the dentist for his failure to preserve the tooth. A tooth that has once decayed may decay again sooner or later.

"O, why should the spirit of mortal be proud" with a mouth full of decayed teeth and roots sending forth pollution at every breath? He shouldn't be. Is he?

Never allow a serviceable tooth to be extracted if it can be avoided, and it usually can be.

The use of the "rubber dam" for keeping the teeth dry during long operations in filling was a long step forward.

When the relation of the teeth, mouth and mastication to digestion is better understood, we shall have better care of the teeth.

Never part with a tooth that can be made serviceable any more than you permit a surgeon to amputate a finger that has a felon on it.

The passive indifference of three-fourths of the race to the value of good teeth as a means to health is the principal drawback to great progress.

You should not expect impossibilities of your dentist. If he exerts all the skill at his command to serve you, you should require no more from him.

Porcelain crowns, perfect reproductions of the natural teeth, are now set on sound roots or on broken or decayed teeth that are past filling. It is one of the most artistic operations in dentistry.

"Killing a nerve" does not mean cessation of hostilities on the part of that particular tooth, as most people suppose, and no dentist will commit this capital offence till all other means have failed.

CALLING THE ANGELS IN.

We mean to do it. Some day, some day,
We mean to slacken this fevered rush
That is wearing our very souls away;
And grant to our loaded hearts a hush
That is only enough to let them hear
The footsteps of angels drawing near.

We mean to do it. Oh, never doubt,
When the burden of daytime broil is o'er,
We'll sit and muse while the stars come out,
As the patriarchs sat at the open door
Of their tents, with a heavenward-gazing eye,
To watch for the angels passing by.

We've seen them afar at high noontide,
When fiercely the world's hot flashing beat;
You never have bidden them turn aside,
And tarry awhile in converse sweet;
Nor prayed them to hallow the cheer we spread,
To drink of our wine and break our bread.

We promise our hearts that when the stress
Of the life-work reaches the longed-for close,
When the weight that we groan with, hinders less,
We'll loosen our thoughts to such repose
As banishes care's disturbing din,
And then—we'll call the angels in.

This day that we dreamed of comes at length,
When, tired of every mocking quest,
And broken in spirit and shorn of strength,
We drop, indeed, at the door of rest,
And wait and watch as the day wanes on—
But the angels we meant to call are gone!

United Presbyterian.

Editorial.

WHERE AND WHAT IS THE MIND?

There is an intimate relation between the brain and the mind; so intimate that it is generally supposed the brain is the residence of the mind. There is much in experience, observation, physiology, and philosphy to confirm this; certainly much more than to say the brain *is* the mind, or even that its activities are the mind. Some would have us believe mind is only an energy of the whole nervous system, so that when the nerves die the mind dies.

But none of these views satisfy either reason, science, or the consciousness of our inner self. If this is all of man, then man is naught but a brute, for the brute has nerves and brain, and in these are faculties of intelligence.

There is evidence that the brain is not even the center of physical life; for, if by abnormal conditions, it is made entirely inactive, or is partially destroyed, the functions of the lungs and of the heart, and of all the other organs, may go on. The brain may be frozen, and yet the heart continue its activities for a time. Much of it may be paralyzed without a paralysis of the rest of the body; a portion of the brain may be removed without affecting the general characteristics and activities of the person.

The brain seems to be little else than convolutions of the nerves. By boiling, it can be unwound, something as you would unwind a spool of thread, or rather a spool of many threads, the nerves representing some lengths remaining unwound. If, therefore, the brain is the seat of the mind, the nerves of motion and sensation must be also. It is said the nerves are but telegraph wires leading to and from the brain. But if the convolutions of the brain are but continuations in coil of these nerves, do they not lead us on—to where? We shall see.

We have, too, the sympathetic system, what shall we say of that? The brain seems to be the center of the sensory and the motor nerves, but where is the center of the sympathetic? We find it near the heart. Here, about four inches in front and below the heart is just as emphatically the center of the sympathetic or ganglionic nervous system as the brain is the center of the sensory and motor nerves. It has four grand branches one each leading to the heart, the stomach, the lungs, and the brain. Neither the composition, the organization, or the functions of this system is like the system having its center in the brain; yet the effects of the sympathetic system on mind and emotions are wonderfully intimate and controlling. These nerves are full of knots, and

each knot is a subordinate center of activity. Why does fright produce "palpitation" by over activity of the heart?—then, perhaps, fainting by collapse of the lungs?—then, perhaps, vomiting by sickness at the stomach?—then, perhaps, congestion by overstraing of the brain? All this is the effect of the fright on this emotional system of nerves, and the reflex action is what we see in these four great centers of life. Yes, this sympathetic system is the nerves of the emotions, fear and faith, love and anger. "Palpitation" is more often the excitation of this great central plexus of sympathetic nerves than "palpitation" of the heart, the latter being merely a reflex action; and many deaths, said to be from disease of the heart, are caused by the overpowering impressions on this great battery of nerves.

If, therefore, we say the mind is in the nerves, we must certainly include the sympathetic nerves, though they have their center so far from the brain, and seem to act so independently of it.

But every organ of the body seems to act independently, in many respects. Each appears to be a center of life-activity. And so does every corpuscle, for each has an independent activity from its birth to its death. In its maturity during its progress through the circulation it brings forth other corpuscles, and they others, and all march on to their respective positions in the various tissues, there to live and to work, to spend and be spent, according to a fixt and intelligent purpose.

Then, too, how far short of such an intelligent, independent, and active life do the very molecules come? Each molecule and each cluster of molecules seems to know just how it should grow, and move so as to produce some specific end, and how to arrange itself so as to bring forth the desired and designed form and identity.

What then shall be the answer to our question? What and where is the mind? It must be more than energy, though it has energy; it must be more than of the life of the body, though it has this life; it must be more than intelligent life, though it has intelligence. All these may and do exist without the mind.

Mind is the spiritual nature residing for a time in the physical body; and though it acts through the body as its present medium with physical things, it can live independently of it. Neither is it without its own body: it is our body within our body, our life within our life, our spiritual being within our physical being. And as our physical body has no center of life, but has its centers every where in the system, so it is in this principal body of our body. *And* when this outer, apparent, mortal body shall decay. This inner, spiritual, immortal person shall still have a body—such a one as it shall please HIM.

Perhaps there is no argument stronger for the separate identity of

this real *I* from its physical environment, and its ability to assert itself in spite of the defects, and even of the dissolution of its temporary tenement, and perhaps there is no argument clearer to prove its independence of this, and its final triumph over it, than many experiences during the article of death. Here we often find a clear answer to, *What and where is the mind?* We refer to the frequent occurrence of the wonderful clearness and strength of the mind as the body nears its final demise, though the brain, and all parts and organs, are giving way,—all chemical affinities dissolving, all physical powers vanishing, all sense of this world receding as into night,—the mind for a moment looms up as a giant, the past life is seen as one great concentration of a vast drama, the future appears in all the realities of a true life: darkness is light, doubt is certainty, faith is substance, and, in a moment, death is life. Friends wonder at such a lucidity of mind, such a wonderful display of prophetic vision, such an unearthly glimpse of glory,—they would almost follow the departing spirit.

TO IMPROVE THE MEMORY.

1st. *Don't try to remember everything.* We are too apt to make the mind a receptacle for a heterogenious medley of the thousand things passing before us. We havn't room for them, and if we have, they cumber the memory to little purpose. We had better shut our eyes to half we see, and leave unread nine-tenths we spend our precious time with. To forget is a fine quality of a good memory; for most we see and hear are trifles, and ninty-nine hundreds of the thoughts crowding for entrance into our memories, had better be turned back.

2nd. *Concentrate your attention on the most important.* A selecting memory, which keeps bright a few beautiful, and lovable, and useful things, is worth more than a prodigious memory crowded with trivialities. To remember the names and order of a dry catalog, or all the signs in a long street, or the dates of the births and deaths of a thousand ancestors, is of little use. Even very many important things on a great variety of subjects, is seldom beneficial to one mind. Merely stowing away undigested facts and figures, though they represent mighty problems, will do us little good. Better take what are more especially useful to us and make them thoroughly our own. In memorising, confine yourself to some wise purpose; and, even in that, select with care and memorize with intelligence. We have seen really good, zealous, and intelligent persons divide themselves up into so many spheres of usefulness that their whole strength is flittered away; so, if our memory is used to retain every good thing every man has said or done, we shall not have time for a proper selection and arrangement for the most important,—especially the most important to *us* in our sphere and business. We may remember many things in a general

way, but if we fill our minds with irrelevant things, we do not hold with distinctness what we should know definitely and particularly.

3rd. *Associate what you would remember.* Instead of gathering facts, ideas, or incidents in an isolated manner, group them. If there is but one of a kind, associate with it some easily remembered circumstance, in some degree related to it. Would you remember a date? Associate with it the occasion giving it value. Would you remember some important feature of that occurence? Immediately group round the incident a picture giving this the principal attraction. Do not attempt to remember every thing connected with it, nor all its petty surroundings; select a few that shall give it point and make the impression indellible. Is it something in science, or philosophy? What is the theory or series of truths to which it naturally belongs? If this is harmonious, interesting, and important, the whole can be remembered better than any one of its facts. In drawing forth a picture you draw forth all its features. Science is the proper and skilful arrangement of important dependent facts. They are intended to be so associated as to prove one another The difference between the scientific man that is able to hand us such unanswerable postulates, and the man of mere loose ideas is that the scientific man has so arranged and associated his facts that they become a perfect whole, symmetrical and convincing. Each is so dependent on all, and yet all so admirably sustaining each, and every part is so cemented by its inevitable relation, that the magnificent structure stands as a monument of intelligent skill, needing neither support nor inscription. So if what is brought into the memory on any subject, comes in, not as rough stones, unhewed timbers, and loose gravel, but each piece skilfully modeled and adapted for specific use, all fashioned and put together into an admirably fitting whole, then it will stand in the memory without danger of losing or labor of keeping. Thus, facts of science that, isolated, would slip through the memory, when associated, become scientific facts, easily retained because that to which they are grouped is clearly defined and beautifully clustered.

4th. *Give close attention to what you would remember.* One of the common causes of a bad memory is inattention. It is said, most we hear passes in one ear and out of the other; but really it does not get so near the memory as that,—it simply makes an indefinite buzzing round the ears. We can seldom remember that concerning which we are not interested. It must be able to arrest our attention, rouse our thoughts, and bring into action reason, judgment, and self interest. While reading, hearing, or studying a subject, dismiss everything else. Let the thoughtless call this absent-mindedness if they will. Stick to the subject in hand so thoroughly you will wholly absorb it, and till

it wholly absorbs you; for if it is worth your attention it is worth all your attention, and if it gets all your attention you will remember all that is important. We once had a class so dull in arithmetic that we were ashamed of them. They could neither "do the sums" nor learn the rules. We hit on the device of giving them practical problems of every day life, and that which would bring each scholar into pleasant competition. One had eggs to exchange for another's sugar; some produced so many pounds of butter from a given quantity of milk, and was sure her profit was greater than John's who expended a given number of day's work on an acre of potatoes and got $25.00 for them. Jane wished to paper her room, and wanted to know how many rolls of paper it would take; and George was digging a well, and was anxious to know how many perch of stone it would require. Thus we passed through the departments of arithmetic, and the science became one of so much pleasure and absorbing interest, that years afterward, when these scholars had entered the arena of a busy and a competing life, they could remember and apply this knowledge with ease and exactness. Then again, a good memory is not a mere aptness to receive impressions; it is the result of a strong effort of a faculty to grasp what it is eager to possess,—it seizes facts as a hungry lion would seize his prey.

5th. *We must understand and make our own what we would remember.* We must be able to grasp by the intellect what we would give the memory. That is not a useful memory that can repeat every word of a scientific postulate, or the precise language of a theological dogma, unless it has the ability to comprehend the truths set forth. What you would retain in the memory must first be compassed by the reason. It must be made so clear that ever afterward, when investigating a similar sphere, this will come to the front as a beautiful lense through which to discover new truths. Yes, more; if you would wonderfully improve your memory, do not be satisfied that your facts are valuable to be put away as so much treasure: make them a part of your being by mastigation, digestion, and assimilation. Thus send them into your memory living identities. Then one of a kind cannot be called without the whole galloping to your service.

6th. *There must be a strong determination to remember.* It is not enough that we memorize; not enough that the mind is interested; the memory must be definitely and enthusiastically charged with what we would remember. Many a golden thought and an important circumstance flits by only indefinitely observed,—forever lost because we did not at once make a strong effort to arrest it and lodge it within our memory. A good memory is the result of strong will, hard work, concentrated thought, and consuming interest.

7th. *Another essential to a good memory is method.* There must be a place for everything and everything in place; nothing of value should be left about loose. It is astonishing to see how much even a weak memory can retain if disciplined to method. We have what is considered a poor memory; yet, if we are to deliver a discourse, though it would be impossible to memorize it, and though we never could interest an audience from manuscript; it would embarrass us to have the merest memorandum before us. Do we leave everything then to the fortune of the occasion? No; the discourse is a perfect, living picture before it is delivered. It is laid out into the most careful and precise method; this method, or skeleton, as it is called, is memorized; the general language and the finer details are left to the inspiration of the occasion. We can generally remember such a discourse for years because the mere title calls to mind the skeleton, and the skeleton calls up the details.

THE GLANDS OF THE LIPS, AND CARIES.

In looking for the cause of decay of the teeth, especially the softening of the labial surfaces of the front teeth, we do not sufficiently consider the effect of the saliva thrown out by the hundred or more glands of the lips. Because these glands are very much smaller than the main glands of salivary secretion, they are not appreciated. Just turn up the upper lip, and hold it back a moment; see what large, round drops of clear saliva come on the surface. This is from these little acinus glands. This saliva, as of all the salivary glands, is usually alkaline; but the mouths of their ducts are so immediately in contact with the oral teeth that if their excretions are acid the effect must by marked.

But what is the remedy? Would that this question was asked more frequently in connection with decay of the teeth. It may be from a pathological condition of the glands, or it may come from a general tendency to acidity of the blood. That is, the materials for the saliva may be secreted from the blood in an acid state, or, by disease of the glands, the saliva may acquire acidity during its manufacture.

A long time ago, we offended some of our learned brethern by stating that the blood may be in an acid condition, like "hard water," and that it was this, coming in contact with alkalinity, that caused an extra deposit of tartar on the teeth and calculus in the liver and kidneys. Such an assertion was declared heterodox. Hard water, we were told, was not acid water, and tartar was deposited when the saliva came in contact with an acid condition of the mouth, not an alkaline condition.

But if it is considered that "hard water" is quickly made "soft",

by adding a little alkali to cause the separation and deposit of the lime, we think we shall be sustained in our position.

If there is a tendency to acidity in the system, a less acid diet and the administration of alkali, is indicated; some of our mineral waters are good.

How about an abnormal condition of these glands? Examine the lip. What is the meaning of its swelled condition? Look on the inside surface and you will sometimes see a congested state of the muscle. Squeeze a small portion, and it will not be a wonder if a particle of matter is thrown out with the fluid that exudes. Test this, and as with all conditions of inflammation, you will find an acid reaction. It is a disease of these minute acinus glands. They may have this condition without the swelling. Cure this and you remove a prolific cause of the softening of the labial surfaces of the oral teeth. *For*, remember, softening of the teeth is not decay, in the common acceptation of the term, but the abstracting from the structure of the tooth its lime, which is thus dissolved out by acid.

The Saliva and the Teeth.—In August ITEMS, taking an item from THE MEDICAL WORLD for our text, we endeavored to show,

1. That mineral acids do not produce caries; that they only soften the fibers.

2. That there is nothing in measles or scarlet fever to destroy the teeth.

3. That acid dyspepsia is not usually a source of tooth decay.

4. That pregnancy is not; that the popular theory that the growing fetus injuriously draws on the teeth and the general bony structure is nonsense.

That in all these cases, it is the viciated condition of the fluids of the mouth which produce caries.

The editor of THE MEDICAL WORLD seems inclined to admit all, but adds: "Why shouldn't the lime be taken from the surface of the tooth and into the blood by the saliva?"

We answer: There is no property in saliva capable of substracting lime from the teeth. Healthy saliva admirably prepares food for digestion in the stomach, but what chemical property has it to dissolve lime from the teeth when that lime is protected by the more than adamantine hardness of the cement enveloping it? The idea that saliva is a powerful solvent is correct, but the popular impression that it is an acid solvent is incorrect. It is neutral or alkaline. It eminently protects the teeth by neutralizing and washing away the acids of fermentation, and by making them harmless by chemical combinations.

IMPLANTATION.

Dr. William J. Younger of California, is creating quite a sensation by his novel mode of inserting human teeth where there may be a vacancy in the jaw. If a person having lost either of the front teeth or the bicuspids wishes the space filled, he finds a suitable human tooth, disinfects it with bichloride of mercury, slits a cross section in the gum, drills a hole through the soft alveolus process and if necessary into the jaw, and inserts the tooth. The whole is the work of a few minutes, and is not as painful as might be imagined.

Dr. Younger claims that the irritation caused by making the hole produces an exudation of cement which fastens on the surface cement of the implanted tooth, making a firm attachment similar to the knitting of a broken bone,—still more similar to the instances on record of successfully causing the union of a piece of foreign bone to the living bone where the latter is so crushed that a part has to be taken out and a foreign piece substituted.

We have seen two instances of Dr. Younger's implantation. They exhibited all the characteristics of success, though, of course, time is the crucial test. One had been inserted a month, the other two months; we were referred to another of six months, which was said to be so successful that the implanted tooth could not be distinguished from the rest; for it is claimed that, in time, even the color of the implanted tooth conforms to its neighbors.

We were, last month, at quite an interesting discussion of this subject before the First District Dental Society of New York. Some were confident it would prove a failure, others thought they could see physiological possibilities for success, and were pleased with its apparent confirmation in the cases reported. The unbelievers were confident a few months would turn even isolated instances of apparent success into failures.

Dr. Younger was asked how he could expect greater success for implantation than for replantation. He replied that in replantation the bone was generally diseased so that it could not throw out healthy cement, and the tooth was often denuded of its cement by ulceration, so that a union of the two could not take place; but in implantation the tooth selected is one retaining its native cement, and the alveolus process is healthy, therefore there is a fair chance for the union of the exuding cement from the bone with the surface cement of the tooth. Where the character of the bone and the tooth were favorable, replantation, as well as implantation, was generally successful.

Prof. Pierce read a paper on *The recuperative powers of a tooth* which seemed to confirm Dr. Younger's position. Dr. Wm. H. Atkinson said he had inserted a tooth by Dr. Younger's process, and it was giving every promise of success; he saw nothing in it physiologically impossible.

Miscellaneous.

THE WONDERFUL THINGS PRODUCED FROM OUR BITUMINOUS COAL.

Few persons have any idea of the wonderful products from a lump of coal—a lump of coal that is placed in the retort of a gas manufactory. Ordinarily burned, the combustion of a lump of coal results in carbonic acid smoke (which is merely soot, or rather the visible portion of smoke is soot), and the ash, in which are found silica, alumina, oxide of iron, phosphoric acid, sulphuric acid, potash, sodium, combined sulphur, sometimes traces of chlorine, titanic acid, and other substances. In the gas retort a variety of products are obtained. The gas as it is carried through the hydraulic main to the purifying rooms takes with it tar and ammonia, the latter evolved from the nitrogen. The ammonia has to be washed out with water in an arrangement by which the ammonia is gathered and saved. Tons and tons of sulphate of ammonia are thus made, and become an article of commerce. The sulphur is removed by caustic lime or oxide of iron. The carbonic acid is also removed by lime, but the sulphurous acid cannot be removed, and, with several others, remains in the gas after all efforts to remove it. The others give the gas its smell.

By distillation, naphtha and asphaltum are obtained. Asphaltum is a dead oil, very useful to preserve wood. From this, too, carbolic acid is obtained, very important in surgical operations as being the most valuable antiseptic known. From naphtha, benzole, eumul, toluol, and cymol are obtained. Naphtha, as is well known, is used as a burning fluid. Benzol is a solvent for grease and oils, very useful in cleaning kid gloves and things of that kind.

Benzole treated with nitric acid produces nitrobenzole. This, singularly enough, is used as a flavoring extract by confectioners and for perfuming soap. When used for this purpose, it is known in commerce as the essence of myrrhbane, which it is not, though it smells and tastes something like essence of myrrhbane or oil of bitter almonds. Nitrobenzole is terribly poisonous, but not more so than some other adulterants used by confectioners.

From nitrobenzole, aniline is obtained. This when first obtained is a perfectly colorless liquid, but darkens as it grows older. From aniline are obtained the coal tar colors, which are so very brilliant. The colors are all of hues. The one known as "Turkey red" is exactly similar to the red that used to be made from the madder root. Since the discovery of this aniline, it has almost completely broken up the raising of madder in Holland. There thousands of acres were devoted to the raising of madder root to get the Turkey red dye. It can be made much cheaper from the product of a gas factory.—*The Coal Trade Journal.*

To Distinguish Steel from Iron.—A German paper has the following: "Pour on the object to be tested a drop of nitric acid of 1.2 specific gravity; let it act for one minute, then rinse with water On iron the acid will cause a whitish-gray, on steel a black stain."

TRUTHS.

Large families are no longer fashionable.

Intemperance and unchastity go hand in hand.

Health is the first requisite for a life of usefulness and happiness.

Teach the girls that the corset and tight dressing are the enemies of life.

The best gift a parent can transmit to a child is a "sound mind in a sound body."

With some men, a beautiful face and a fine dress go farther than good health and common sense.

If that which is covered could be revealed, what a commotion there would be among women and doctors!

Man without woman, or woman without man, is not a unit in this world. Either one alone is a vulgar fraction.

If style were followed according to the plates in *Fashion Bazars*, our women would all be transformed into wasps.

If men would not encourage such extravagance in the dress of women, it would not be long before fashions would change.

—*Dr. M. T. Runnels.*

Starving Patients.—A leading physician says that a patient who is lying dying of exhaustion is generally dying of starvation. We give him beef-tea, calf's-foot jelly, seltzer and milk—that is a small quantity of the sugar of milk and some fat; but the jelly is the poorest sort of food and the beef-tea is a mere stimulant. The popular belief that beef-tea contains "the very strength of the meat," is a terrible error—it has no food value.

"**Rapid eating** and too much eating—and this is my health "lesson to myself and others—is the great enemy of student life and "of all life."—HON. ERASTUS BROOKS.

If you wish to have a shoe made of durable materials, you should make the upper leather of the mouth of a hard drinker, for that never lets in water.

"One of the queerest cases I ever heard of," said the story-teller in the smoking car, "is down in our town. There's a man there who has a peculiar defect. I know him well. He's a draftsman, and an accomplished man. He can draw anything he is asked to draw, with a solitary exception, and do as good a job as any man in the country. But that one exception lost him his situation, his wife, his friends and his reputation, and now it is killing him. Isn't it strange?" "Very. But what is that he can't draw?" "A sober breath."

Mrs. Parvenu was at a very exclusive affair on Sixteenth street the other evening, and the hostess was asking about her daughter, whose health had not been good. "Oh," said the lady, "Mollie is not improving as I should like to have her. You see the doctor told me she ought to try calisthenics, and I've been to every drug store in town, but can't find a bit anywhere. I sent to New York for some, but I hain't heard from there yet."

Stuttering is a purely nervous difficulty. The vocal muscles are able to do perfect work, but, from deficient innervation the mind cannot command them fully, and the trouble of speech commences, and soon the habit is formed, and generally grows worse and worse. The mind *fears* that the words will fail, and as the result they do fail. If the fear could be removed, the trouble would in large part cease. A cure can be accomplished in no way but by the persistent and determined effort of the sufferer himself. Others can accomplish little for him. If his attention and his *fears* can be removed from the muscles of his throat while speaking, if he can *forget* that any trouble is there, he will soon improve in his power. This is the one line in which his efforts must be made, and with persistent patience it can be successful.

Speculations about this Continent.—The opinion is expressed by an eminent American scientist, in a recent lecture, that the North American continent had the beginning of its formation in ilands rising out of the immense ocean, which grew till they finally touched each other. Many of these islands were volcanoes that threw up materials that had formed below the surface of the water. The Hawaiian Islands have had many volcanoes, and were much formed by them. Their whole area above the sea is no more than the State of Massachusetts, but their combined bases must be equal to the whole of New England and New York united. Thus the original islands of this continent could easily have been made to enlarge and join each other, and the granite rock so abundant was doubtless once erupted from volcanoes, like flowing lava. Among the first volcanic islands must have been Greenland, Canada east of Winnipeg, the Atlantic district, the Rocky Mountains, and the Sierra Nevadas; but, as the islands rose and enlarged, great depressions would naturally commence and go on, and in this way the depressions of Hudson's Bay, the Mississippi Valley, and the Salt Lake and Nevada basins were formed. These depressions would fill with massive sediments, which would eventually become rocks, and the depressions would have a saucer or platter shape.—*Sun.*

A Petrified Mammoth Tooth has been found near Helena, Montana Territory.—The tooth is a fine specimen of petrifaction and a veritable monster. Others have been found in past years in this vicinity, but none as large as this. It is a molar, will weigh eight or ten pounds. It is seven inches high, three and a half thick, and has a grinding surface of nearly eighteen square inches, its face being five inches long by three and a half wide. The roots and marks of its connection with the jaw are plainly visible, and the bony structure of the grinding surface is still discernible, notwithstanding the countless ages that have elapsed since it was engaged in munching the primeval bunch grass on the eternal hills.

For a Good Paste that will neither decay or become moldy, mix clean flour with cold water into a paste well blended, then add boiling water, stirring well up till it is of a consistency that can be easily and smoothly spread with a brush; add to this a spoonful or two of brown sugar, a little corrosive sublimate, and about half a dozen drops of oil of lavender or other suitable perfume.

For Corns and Warts, take of salicylic acid, 30 parts; ext. cannabis indica, 5 parts; flexible collodion, 240 parts. Mix and apply with camel hair pencil every third evening on retiring. Repeat as often as necessary. A gradual softening of the corn and almost immediate relief of pain will be the result.

A very good impression of any article of metal having a flat, ornamental surface may be taken by wetting some note paper with the tongue and smoking it over a gas flame. The article is then pressed upon the smoked part, when, if the operation be carefully conducted, a clear impression will appear. This can be made permanent by drawing the paper through milk and afterward drying it.

It is said that the most satisfactory results have been obtained at the Government arms factory in Springfield, Mass., from the use of the vapor of gasoline as a forge fuel. The expense is said to be not even half that of coal, and there are other minor advantages. This success has greatly interested New England metal workers, who are already beginning to adopt it in several factories.

Paper will stick to walls that are washed in a solution of one-fourth pound of glue to a gallon of water.

Remove flower-pot stains from window sills by rubbing with fine wood ashes and rinse with clean water.

If gilt frames, when new, are covered with a coat of white varnish, all specks can then be washed off with water without harm.

Oilcloth may be improved in appearance by rubbing it with a mixture of half ounce of beeswax in a saucerful of turpentine. Set this in a warm place until they can be thoroughly mixed. Apply with a flannel cloth, and then rub with a dry flannel.

Mortar and paint may be removed from window glass with hot, sharp vinegar.

Hellebore sprinkled on the floor at night destroys cockroaches. They eat it and are poisoned.

Air, but don't sun, feather ticks and pillows; the sun draws the oil, making an unpleasant smell.

Drain pipes, and all places that are sour or impure, may be cleansed with lime water or carbolic acid.

Furniture needs less care as much as other woodwork. It may be washed with warm soapsuds quickly, wiped dry and then rub with an oily cloth. To polish it rub with rotten stone and sweet oil. Clean off the oil, and polish with chamois skin.